Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of claims:

1. (Currently amended) A sensor for sensing a parameter, the sensor comprising:

(i) an excitation winding comprising a plurality of coils having different spatial functions;

(ii) a signal generator operable to generate excitation signals and arranged to apply the generated excitation signals to the excitation coils;

(iii) a sense coil that can be electromagnetically coupled to the excitation winding such that, in response to ~~the~~ an excitation signal being applied to the excitation winding by the signal generator, there is generated in the sense coil a periodic electric signal having a phase that is indicative of the value of the parameter to be measured by the sensor; and

(iv) a signal processor operable to process the periodic electric signal generated in the sense coil to determine a value representative of the parameter being measured;

wherein the signal processor is operable to generate a second signal at a frequency that differs from that of the excitation signal only by a small amount, and to mix the second signal with the signal received from the sense coil to generate a third signal having a frequency component equal to the difference between the frequency of the excitation signal and that of the second signal, and to determine the said value from the phase of the third signal.

2. (Original) A sensor as claimed in claim 1, wherein the sensor winding can be electromagnetically coupled to the excitation winding via an intermediate device.

3. (Original) A sensor as claimed in claim 2 wherein the intermediate device comprises an object of defined permeability or permittivity.

4. (Original) A sensor as claimed in claim 2, wherein the intermediate device comprises a resonator having a resonant frequency substantially equal to the frequency of the excitation signal.

5. (Original) A sensor as claimed in claim 4, wherein the resonator comprises a passive LC circuit.

6. (Previously Presented) A sensor as claimed in claim 4, wherein the resonator has a quality factor of at least 10.

7. (Previously Presented) A sensor as claimed in claim 2, wherein the parameter that is determined is the position of the intermediate device in one or more dimensions.

8. (Previously Presented) A sensor as claimed in claim 2, wherein the parameter that is determined is orientation of the intermediate device.

9. (Previously Presented) A sensor as claimed in claim 2, wherein the parameter that is determined is temperature.

10. (Previously Presented) A sensor as claimed in claim 2, wherein the parameter that is determined is humidity.

11. (Previously Presented) A sensor as claimed in claim 2, which includes at least two excitation windings and/or sense coils in order to determine the position of the intermediate device in two or more dimensions.

12. (Original)A sensor as claimed in claim 11, which includes at least three excitation windings and/or sense coils in order to determine the position of the resonator in three dimensions.

13. (Original) A sensor as claimed in claim 4, wherein the signal generator is operable periodically to generate an excitation signal having a frequency different from the resonant frequency of the resonator in order for the sensor to determine background noise picked up by the sensor coil.

14. (Previously Presented) A sensor as claimed in claim 1, wherein the or each excitation winding comprises a coil or coils having plurality of loops arranged so that current flowing through the excitation winding flows around one loop in an opposite direction to the flow of current around the or at least one other loop.

15. (Previously Presented) A sensor as claimed in claim 1, wherein the or each excitation winding comprises a pair of coils that are arranged in space quadrature so that the same current flowing in each coil will produce magnetic fields in quadrature relationship.

16. (Original) A sensor as claimed in claim 14, wherein one coil of the or each excitation winding is arranged to produce a magnetic field one component of which has a magnitude that varies as the sine of the distance from a reference point, while the other coil of the or each excitation winding is arranged to produce a magnetic field component in the same direction whose magnitude varies as the cosine of the distance from the reference point.

17. (Previously Presented) A sensor as claimed in claim 1, wherein the difference between the frequency of the excitation signal and that of the second signal is not more than 30% of the frequency of the excitation signal.

18. (Original) A sensor as claimed in claim 17, wherein the difference between the frequency of the excitation signal and that of the second signal is not more than 10% of that of the second signal.

19. (Previously Presented)) A sensor as claimed in claim 1, wherein the excitation signal comprises a pair of oscillating signals that are in time quadrature, each of which is applied to one of the coils.

20. (Original) A sensor as claimed in claim 19, wherein the signal generator is operable to invert one of the oscillating signals, and the signal processor is operable to determine the value of the parameter by processing quantities determined from both the inverted and non-inverted oscillating signals.

21. (Previously Presented) A sensor as claimed in claim 1, wherein the signal processor includes a filter to remove components of the third signal having frequencies higher than the difference between the frequency of the excitation signal and that of the second signal.

22. (Previously Presented) A sensor as claimed in claim 1, wherein the signal processor is operable to generate a reference signal at a frequency equal to that of the said frequency component of the third signal against which the phase of the third signal is referred in order to determine the value of the parameter to be determined.

23. (Previously Presented) A sensor as claimed in claim 1, wherein the signal processor includes a comparator that determines the cross-over point of the third signal.

24. (Original) A sensor as claimed in claim 22, wherein the signal processor includes a comparator that determines the cross-over point of the third signal and a comparator that determines the cross-over point of the reference signal, and includes a timer to measure the phase difference between the third signal, and the reference signal.

25. (Previously Presented) A sensor as claimed in claim 1, wherein the excitation windings and sense coil are generally co-planar.

26. (Previously Presented) A sensor as claimed in claim 1, wherein the signal generator is operable to generate a digital excitation signal.

27. (Previously Presented) A sensor as claimed claim 1, wherein the excitation signal has a frequency of at least 100 kHz.

28. (Previously Presented) A sensor as claimed in claim 1, wherein the said frequency component of the third signal is in the range of from 100Hz to 100kHz.

29. (Previously Presented) A sensor as claimed in claim 1, which includes means for storing calibration data for converting the phase of the third signal into a measurement value for the parameter.

30. (Canceled)